Docket No.: 05-0901 (8470-000118)
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Michael L. Crabtree

Application No.: 10/627,034 Confirmation No.: 3716

Filed: July 24, 2003 Art Unit: 3683

For: Airspring Sleeve Examiner: M. O. Sy

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on March 1, 2007, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying FEE TRANSMITTAL.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205.2:

I. Real Party In Interest
II Related Appeals and Interferences
III. Status of Claims
IV. Status of Amendments
V. Summary of Claimed Subject Matter
VI. Grounds of Rejection to be Reviewed on Appeal
VII. Argument

RWM/dcr

VIII. Claims
Appendix A Claims
Appendix B Evidence
Appendix C Related Proceedings

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is: Freudenberg-NOK General Partnership

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 5 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 4-11, 13, 14
2. Claims withdrawn from consideration but not canceled: n/a
3. Claims pending: 1-3, 12, 15
4. Claims allowed: n/a
5. Claims rejected: 1-3, 12, 15

C. Claims On Appeal

The claims on appeal are claims 1-3, 12, 15

IV. STATUS OF AMENDMENTS

All amendments in the present application have been entered.

Accordingly, the claims enclosed herein as Appendix A incorporate the amendments to claims 1-3, 12, 15, as indicated in the paper filed by Applicant on November 28, 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

An air spring sleeve **[Fig. 1, item 103, p.3, lines 22-30]** comprising:

an elastomer body **[Fig. 1, item 103, p.3 line 23 – p.4 line 8]** having first and second ends configured to be coupled to first and second structures **[Fig. 1 items 101, 102, p.3 lines 23-24]**;

a first cord **[Figs. 1-3, items 103a, 200, p.3 line 24- p.4 line 24]** embedded in the elastomer body **[103]**, the first cord **[103a]** wound with a first helix angle **[Figs 2 and 3, item Θ1, p.4 lines 20-24, p.5 lines 25-p.6 line 4]** with respect to a sleeve centerline **[Fig.1 item CL]** and extending from said first end to said second end;

a second cord **[Figs. 1-3, items 103b, 201, p.3 line 24- p.4 line 24]** embedded in the elastomer body **[103]**, the second cord **[103b]** wound with a second helix angle **[Figs 2 and 3, item Θ2, p.4 lines 20-24, p.5 lines 25-p.6 line 4]** with respect to a sleeve centerline **[Fig.1 item CL]** and extending from said first end to said second end;

the first helix angle **[Θ1]** and the second helix angle **[Θ2]** describe a differential helix angle **[ΔΘ, p.5 lines 25-29]**;

the first cord **[103a]** is disposed radially inward **[p.4, lines 2-4]** of the second cord **[103b]**; and

the first helix angle **[Θ1]** is greater than the second helix angle **[Θ2, p.5, line 25- p8, line 2]**.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether the combination of Warmuth, II et al (US 4,741,517) and Hirtreiter et al (US 3,897,941) establish a prima facie case of obviousness under 35 U.S.C. § 103(a), with respect to Claim 1-3, 12, and 15.

VII. ARGUMENT

A. THE COMBINATION OF WARMUTH, II ET AL '517 AND HIRTREITER ET AL '941 DO NOT RENDER OBVIOUS THE INVENTION OF CLAIMS 1-3, 12, AND 15

Claim 1 includes the limitations of

"an elastomer body having first and second ends configured to be coupled to first and second structures;

a first cord embedded in the elastomer body, the first cord wound with a first helix angle with respect to a sleeve centerline and extending from said first end to said second end;

a second cord embedded in the elastomer body, the second cord wound with a second helix angle with respect to a sleeve centerline and extending from said first end to said second end;

the first helix angle and the second helix angle describe a differential helix angle;

the first cord is disposed radially inward of the second cord; and

the first helix angle is greater than the second helix angle."

The final office action cites Warmuth, II et al (US 4,741,517) for disclosing an air spring sleeve having an elastomer body 18 with first and second ends configured to be coupled to first and second structures 12, 14. A first cord 29 and a second cord 31 are embedded in the elastomer body 18. The office action acknowledges that the helix angles of the first and second cords are the same, as disclosed at col. 4 lines 7-12. (See Final Office Action mailed 10/03/2006, page 2). The Office action further acknowledges that "Warmuth failed to disclose the helix angle of the first cord

is greater than the helix angle of the second cord and that the differential helix angle in the range of approximately 0 to 5 degree or 0 to 2.5 degrees." (See office action, page 3). The motivation for the combination and modifications suggested by the Office Action is merely that "[i]t would have been obvious to one of ordinary skill in the art to modify the cords of Warmuth with the helix angle of the first cord is greater than the helix angle of the second cord and the differential helix angle is in the range of approximately 0 to 5 degrees or 0 to 2.5 degrees, as taught by Hirtrieter et al., in order to optimize the dynamic flexibility of the sleeve depending upon the type of application."

In Hirtreiter, cords 17 are part of reinforcement 16, which is part of connecting portion 13. As clearly seen in Figure 1 below, connecting portion 13 does not extend the length of body 2. Specifically, portion 13 (shown in Figure 1) stops short of extending to either end. As indicated in Hirtreiter, "[t]he body 2 includes a flexing portion 11 at one peripheral end 12 thereof and a **non-flexing** generally cylindrical connecting portion 13 extending longitudinally or axially of the member 1 between the flexing portion 11 and the opposite peripheral end portion 14 thereof to join or connect these portions." (col. 4, lines 42-47, emphasis added). The Office Action relies on the helix angle of the steel wire cords 17 of the connecting portion 13 for allegedly teaching that the helix angles of the inner cords of Warmuth II et al can be larger than the helix angle of the outer cords. However, the Office Action ignores that the function of the steel wire cords 17 of the connecting portion 13 is entirely different than the fabric cords 29, 31 of Warmuth II et al. The purpose of the connecting portion 13 of Hertreiter is specifically disclosed as being "a **non-flexing** generally cylindrical connecting portion 13" (see col. 4, lines 43-45, emphasis added). The Office Action appears to be impermissibly picking and choosing among the individual

elements of the references regardless of the fact that the alleged teachings of a differential helix angle come from a non-analogous **non-flexing** connecting portion.

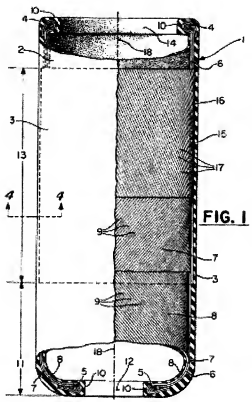

FIG. 1

"Virtually all inventions are necessarily combinations of old elements. The notion, therefore, that combination claims can be declared invalid merely upon finding similar elements in separate prior patents cannot be the law under the statute, Section 103." Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1575, 1 USPQ2d 1593, 1603 (Fed. Cir. 1987). The air spring sleeve of claim 1 accounts for a torsional imbalance that exists in prior art air spring sleeves having inner and outer plies with identical cord helix angles. This torsional imbalance is due to the fact that one of the plies is disposed inwardly of the other, resulting in different diameters for the plies.

The air spring sleeve of claim 1 remedies this torsional imbalance by having the first inner cord disposed inwardly of the second cord at a helix angle greater than the helix angle of the second outer cord. While the Office Action submits that Hirtreiter teaches the claimed differential helix angle, there is no reason to modify Warmuth based on these features because the teachings of Hirtreiter are clearly non-analogous and there is no suggestion in either of the references to account for a torsional imbalance with a cord differential helix angle. Without the claimed extent of the cords 17 of Hirtreiter extending between first and second ends of the elastomer body the torsional load is not effectively transmitted through the cord members 17 of Hirtreirer and the benefit of the claimed airspring sleeve is not fully attained. As such, the combination of references cited by the Examiner cannot properly be seen as teaching the invention of claim 1, as a whole.

Any motivation for the combination and modifications cited by the Examiner appears to come from Applicant's own disclosure. Applicant respectfully reminds the Examiner that "[t]he invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time. The invention must be evaluated not through the eyes of the inventor, who may have been of exceptional skill, but as by one of 'ordinary skill.'" Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985). Applicant therefore submits that claim 1 is in condition for allowance.

Claims 2, 3, 12, and 15 depend from claim 1 and should therefore be in condition for allowance for the reasons set forth above regarding claim 1. Therefore, Applicant requests that this Board overturn the rejection of claims 1-3, 12, and 15.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A include the amendments filed by Applicant on November 28, 2006, and do not include the amendment(s) filed on November 28, 2006.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 08-0750, under Order No. 05-0901 (8470-000118) from which the undersigned is authorized to draw.

Dated: April 30, 2007

Respectfully submitted,

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 10/627,034

1. An air spring sleeve comprising:

an elastomer body having first and second ends configured to be coupled to first and second structures;

a first cord embedded in the elastomer body, the first cord wound with a first helix angle with respect to a sleeve centerline and extending from said first end to said second end;

a second cord embedded in the elastomer body, the second cord wound with a second helix angle with respect to a sleeve centerline and extending from said first end to said second end;

the first helix angle and the second helix angle describe a differential helix angle;

the first cord is disposed radially inward of the second cord; and

the first helix angle is greater than the second helix angle.

2. The air spring as in claim 1, wherein the differential helix angle is in the range of approximately 0° to 5°.

3. The air spring as in claim 2, wherein the differential helix angle is in the range of approximately 0° to 2.5°.

4-11. (cancelled)

12. The air spring as in claim 1, wherein the first cord has a structure similar to the structure of the second cord.

13. (cancelled)

14. (cancelled)

15. The air spring of claim 1, wherein said first and second cords are made from a material selected from a group consisting of aramid, nylon, polyester, textiles or combinations thereof.

APPENDIX B

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the Examiner is being submitted.

APPENDIX C

No related proceedings are referenced in II. above, hence copies of decisions in related proceedings are not provided.